Pat Warmington
Ravens, Inc.
1201 W. Culver Road
Knox, Indiana 46534

Re: Registered Construction and Operation Status,
149-12765-00015

Dear Mr. Warmington:

The renewal application from Ravens, Inc., received on October 4, 2000, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following metal waste transfer trailer fabrication and surface coating facility, to be located at 1201 W. Culver Road, Knox, Indiana 46534, is classified as registered:

(1) One (1) paint spray booth, identified as EU-1, utilizing an airless and HVLP spray application system, coating a maximum of 0.2 waste transfer trailers per hour, using dry filters for particulate matter control, and exhausting to one (1) stack, identified as S-1;

(2) Twenty seven (27) metal inert gas (MIG) welding stations, each with a maximum wire consumption rate of 2.5 pounds per hour;

(3) Twelve (12) natural gas-fired space heaters, identified as H1 through H12, two (2) rated at 0.4 million (MM) British thermal units per hour (Btu/hr) each, and ten (10) rated at 0.25 MMBtu/hr each; and

(4) Unpaved roads.

The following conditions shall be applicable:

(1) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuos opacity monitor in a six (6) hour period.

(2) Pursuant to 326 IAC 6-3-2 (Process Operations), the particulate matter (PM) from the welding operation shall be limited to 0.42 pounds per hour for a maximum process rate of 67.5 pounds per hour.

(3) The particulate matter (PM) from the one (1) paint spray booth (EU-1) shall be limited by the following:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

The dry filters shall be in operation at all times the one (1) paint spray booth (EU-1) is in operation, in order to comply with this limit.

(4) An authorized individual shall provide an annual notice to the Office of Air Management that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

no later than March 1 of each year, with the annual notice being submitted in the format attached.

This registration supersedes any previous air approvals issued to this source. The source may operate according to 326 IAC 2-5.5.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Management (OAM) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

NH/EVP

cc: File - Starke County
Starke County Health Department
Air Compliance - Paul Karkiewicz
Northern Regional Office
Permit Tracking - Janet Mobley
Air Programs Section- Michelle Boner

Registration
Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3)

Company Name:	Ravens, Inc.
Address:	1201 W. Culver Road
City:	Knox
Authorized individual:	Pat Warmington
Phone #:	(219) 772-6673
Registration #:	149-12765-00015

I hereby certify that Ravens, Inc. is still in operation and is in compliance with the requirements of Registration 149-12765-00015.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for a Registration Renewal

Source Background and Description

Source Name: Ravens, Inc.
Source Location: 1201 W. Culver Road, Knox, Indiana 46534
County: Starke
SIC Code: 3569
Operation Permit No.: R149-12765-00015
Permit Reviewer: NH/EVP

The Office of Air Management (OAM) has reviewed a renewal application from Ravens, Inc. relating to the operation of a metal waste transfer trailer fabrication and surface coating facility.

History

Galbreath, Inc. Plant 7 was issued a Registration Construction and Operation Status permit (CP 149-5077-00015) on February 20, 1996. A Notice-only change to Registration (149-10867-00015) issued on May 14, 1999, transferred the permit to Ravens, Inc. Ravens, Inc. submitted a registration renewal application on October 4, 2000. There are no new emission units being added.

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

(1) One (1) paint spray booth, identified as EU-1, utilizing an airless and HVLP spray application system, coating a maximum of 0.2 waste transfer trailers per hour, using dry filters for particulate matter control, and exhausting to one (1) stack, identified as S-1;

(2) Twenty seven (27) metal inert gas (MIG) welding stations, each with a maximum wire consumption rate of 2.5 pounds per hour;

(3) Twelve (12) natural gas-fired space heaters, identified as H1 through H12, two (2) rated at 0.4 million (MM) British thermal units per hour (Btu/hr) each, and ten (10) rated at 0.25 MMBtu/hr each; and

(4) Unpaved roads.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

(a) Registration CP 149-5077-00015, issued on February 20, 1996; and

(b) Notice Only Change to Registration 149-10867-00015, issued on May 14, 1999.

All conditions from previous approvals were incorporated into this permit.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
S-1	Paint Spray Booth (EU-1)	10	42" x 56"	14,000	75

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on October 4, 2000.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (Appendix A, pages 1 through 6).

Potential To Emit of the Entire Source

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency."

Pollutant	Potential To Emit (tons/year)
PM	11.62
PM-10	11.70
SO_2	0.01
VOC	22.96
CO	1.21
NO_x	1.45

HAP's	Potential To Emit (tons/year)
Xylene	1.46
Ethyl Benzene	0.28
Methyl Isobutyl Ketone	3.78
Napthalene	0.23
Toluene	3.05
Methanol	0.46
Methyl Ethyl Ketone	0.47
TOTAL	9.75

(a) Potential emissions (as defined in the Indiana Rule) of VOC are less than 25 tons per year, but greater than 5 tons per year. Therefore, pursuant to 326 IAC 2-5-5, a registration is required.

(b) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in Starke County.

Pollutant	Status
PM-10	attainment
SO_2	attainment
NO_2	attainment
Ozone	attainment
CO	attainment
Lead	attainment

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Starke County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Starke County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(c) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2, 40 CFR 52.21, or 326 IAC 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)
This existing source, including the enissions from this permit R149-12765-00015, is still not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) each criteria pollutant is less than 100 tons per year,
(b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
(c) any combination of HAPs is less than 25 tons/year.

This status is based on all the air approvals issued to the source. This status has been verified by the OAM inspector assigned to the source.

Federal Rule Applicability

(a) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) applicable to this source.

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in Starke County and the potential to emit all criteria pollutants is less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 6-3-2 (Process Operations)

(a) The particulate matter (PM) from the one (1) paint spray booth (EU-1) shall be limited by the following:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and P = process weight rate in tons per hour

The dry filters shall be in operation at all times the one (1) paint spray booth (EU-1) is in operation, in order to comply with this limit.

(b) The particulate matter (PM) from the welding operation shall be limited by the following:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and P = process weight rate in tons per hour

$E = 4.10\ (0.03375)^{0.67} = 0.42$ lbs PM/hr

Based on the above equation, particulate matter emissions from the welding operation shall be limited to 0.42 pounds per hour for a maximum process rate of 67.5 pounds per hour.

Compliance calculation:
(1.60 tons PM/yr) * (yr/8,760 hrs) * (2,000 lbs/ton) = 0.37 lbs PM/hr

Actual lbs PM/hr (0.37) is less than the allowable lbs PM/hr (0.42), therefore the welding operation will comply with the requirements of 326 IAC 6-3-2.

326 IAC 8-2 (Surface Coating Emission Limitations)

326 IAC 8-2 does not apply because potential emissions of VOC are less than 25 tons per year, construction of this facility commenced before July 1, 1990 and the facility is located in Starke County.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants (HAPs) set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

(a) This source will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Clean Air Act Amendments.

(b) See attached calculations for detailed air toxic calculations (Appendix A, page 3).

Conclusion

The operation of this metal waste transfer trailer fabrication and surface coating facility shall be subject to the conditions of the attached proposed **Registration R149-12765-00015.**

Appendix A: Emission Calculations

Company Name: Ravens, Inc.
Address City IN Zip: 1201 W. Culver Road, Knox, IN 46534
Registration: 149-12765
Plt ID: 149-00015
Reviewer: NH/EVP

Uncontrolled Potential Emissions (tons/year)

	Emissions Generating Activity				
Pollutant	Surface Coating	Welding Operation	Natural Gas Combustion	Unpaved Roads	**TOTAL**
PM	9.36	1.60	0.03	0.63	11.62
PM10	9.36	1.60	0.11	0.63	11.70
SO2	0.00	0.00	0.01	0.00	0.01
NOx	0.00	0.00	1.45	0.00	1.45
VOC	22.88	0.00	0.08	0.00	22.96
CO	0.00	0.00	1.21	0.00	1.21
total HAPs	9.75	0.09	0.00	0.00	9.84
worst case single HAP	3.78	0.09	0.00	0.00	3.78

Total emissions based on rated capacity at 8,760 hours/year.

Controlled Potential Emissions (tons/year)

	Emissions Generating Activity				
Pollutant	Surface Coating	Welding Operation	Natural Gas Combustion	Unpaved Roads	**TOTAL**
PM	0.94	1.60	0.03	0.63	3.20
PM10	0.94	1.60	0.11	0.63	3.28
SO2	0.00	0.00	0.01	0.00	0.01
NOx	0.00	0.00	1.45	0.00	1.45
VOC	22.88	0.00	0.08	0.00	22.96
CO	0.00	0.00	1.21	0.00	1.21
total HAPs	9.75	0.09	0.00	0.00	9.84
worst case single HAP	3.78	0.09	0.00	0.00	3.78

Total emissions based on rated capacity at 8,760 hours/year, after control.

Appendix A: Emissions Calculations
VOC and Particulate
From Surface Coating Operations

Company Name: Ravens, Inc.
Address City IN Zip: 1201 W. Culver Road, Knox, IN 46534
Registration: 149-12765
Plt ID: 149-00015
Reviewer: NH/EVP

Material	Density (Lb/Gal)	Weight % Volatile (H20 & Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Volatiles (solids)	Gal of Mat. (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential (ton/yr)	lb VOC/gal solids	Transfer Efficiency
Primers																
PPG Gray Buff Epoxy Primer	12.04	27.88%	0.20%	27.68%	0.29%	51.82%	3.00000	0.200	3.34	3.33	2.00	47.99	8.76	5.70	6.43	75%
Ravens Primer	10.41	41.62%	19.20%	22.42%	30.38%	36.27%	3.00000	0.200	3.35	2.33	1.40	33.61	6.13	3.99	6.43	75%
Paints																
Ravens Red	7.94	49.69%	16.60%	33.09%	20.03%	44.07%	4.00000	0.200	3.29	2.63	2.10	50.45	9.21	3.50	5.96	75%
Ravens Black	7.94	48.38%	16.60%	31.78%	20.03%	45.15%	4.00000	0.200	3.16	2.52	2.02	48.45	8.84	3.59	5.59	75%
Ravens Blue	7.79	59.78%	34.00%	25.78%	40.25%	32.55%	4.00000	0.200	3.36	2.01	1.61	38.56	7.04	2.74	6.17	75%
Ravens Silver	8.13	48.68%	16.40%	32.28%	20.26%	43.89%	4.00000	0.200	3.29	2.62	2.10	50.39	9.20	3.65	5.98	75%
Cleaning Solvents																
Lacquer Thinner	7.01	100.00%	0.00%	100.00%	0.00%	0.00%	0.80000	0.200	7.01	7.01	1.12	26.92	4.91	0.00	ERR	0%
State Potential Emissions			**Add worst case coating to all solvents**								**5.22**	**125.35**	**22.88**	**9.36**		

Controlled Potential Emissions

	Control Efficiency PM	Controlled PM tons/yr
Total Controlled Potential Emissions:	90.00%	**0.94**

Note: Coating are mutually exclusive

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)
Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)
Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)
Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)
Total = Worst Coating + Sum of all solvents used

Appendix A: Emission Calculations
HAP Emission Calculations

Company Name: Ravens, Inc.
Address City IN Zip: 1201 W. Culver Road, Knox, IN 46534
Registration #: 149-12765
Plt ID: 149-00015
Permit Reviewer: NH/EVP

Material	Density (Lb/Gal)	Gallons of Material (gal/unit)	Maximum (unit/hour)	Weight % Xylene	Weight % Ethyl Benzene	Weight % Methyl Isobutyl Ketone	Weight % Napthalene	Weight % Toluene	Weight % Methanol	Weight % Methyl Ethyl Ketone	Xylene Emissions (ton/yr)	Ethyl Benzene Emissions (ton/yr)	Methyl Isobutyl Ketone Emissions (ton/yr)	Napthalene Emissions (ton/yr)	Toluene Emissions (ton/yr)	Methanol Emissions (ton/yr)	Methyl Ethyl Ketone Emissions (ton/yr)
Primers																	
PPG Gray Buff Epoxy Primer	12.04	3.000000	0.20	3.60%	0.90%	10.48%	0.00%	0.00%	0.00%	0.00%	1.14	0.28	3.32	0.00	0.00	0.00	0.00
Ravens Primer	10.41	3.000000	0.20	0.81%	0.20%	2.35%	0.00%	0.00%	0.00%	0.00%	0.22	0.05	0.64	0.00	0.00	0.00	0.00
Paints																	
Ravens Red	7.94	4.000000	0.20	0.00%	0.00%	0.00%	0.78%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.22	0.00	0.00	0.00
Ravens Black	7.94	4.000000	0.20	0.00%	0.00%	0.00%	0.83%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.23	0.00	0.00	0.00
Ravens Blue	7.79	4.000000	0.20	0.00%	0.00%	0.00%	0.59%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.16	0.00	0.00	0.00
Ravesn Silver	8.13	4.000000	0.20	1.13%	0.00%	0.00%	0.68%	0.00%	0.00%	0.00%	0.32	0.00	0.00	0.19	0.00	0.00	0.00
Cleaning Solvents																	
Lacquer Thinner	7.01	0.800000	0.20	0.00%	0.00%	9.53%	0.00%	62.11%	9.45%	9.57%	0.00	0.00	0.47	0.00	3.05	0.46	0.47
Total State Potential Emissions											**1.46**	**0.28**	**3.78**	**0.23**	**3.05**	**0.46**	**0.47**
																Total HAPs (tons/yr)	**9.75**

METHODOLOGY

HAPS emission rate (tons/yr) = Density (lb/gal) * Gal of Material (gal/unit) * Maximum (unit/hr) * Weight % HAP * 8760 hrs/yr * 1 ton/2000 lbs

Appendix A: Welding and Thermal Cutting

Company Name: Ravens, Inc.
Address City IN Zip: 1201 W. Culver Road, Knox, IN 46534
Registration No./Plt ID: 149-12765-00015
Reviewer: NH/EVP

PROCESS WELDING	Number of Stations	electrode consumption per station (lbs/hr)		EMISSION FACTORS * (lb pollutant / lb electrode) PM = PM10	Mn	Ni	Cr	EMISSIONS (lb/hr) PM = PM10	Mn	Ni	Cr	TOTAL HAPS (lb/hr)
Metal Inert Gas (MIG)(ER70S-3)	27	2.5		0.0051	0.0003	--	--	0.344	0.02025	0.000	0	0.020
FLAME CUTTING	Number of Stations	Max. Metal Thickness Cut (in.)	Max. Metal Cutting Rate (in./minute)	EMISSION FACTORS (lb pollutant/1,000 inches cut, 1" thick) PM = PM10	Mn	Ni	Cr	EMISSIONS (lbs/hr) PM = PM10	Mn	Ni	Cr	TOTAL HAPS (lb/hr)
Oxyacetylene	1	0.75	1.5	0.1622	0.0005	0.0001	0.0003	0.011	0.000	0.000	0.000	0.000
Plasma	1	0.75	1.5	0.1622	0.0005	0.0001	0.0003	0.011	0.000	0.000	0.000	0.000
EMISSION TOTALS								PM = PM10	Mn	Ni	Cr	Total HAPs
Potential Emissions lbs/hr								0.37	0.02	0.00	0.00	0.02
Potential Emissions lbs/day								8.79	0.49	0.00	0.00	0.49
Potential Emissions tons/year								**1.60**	0.09	0.00	0.00	0.09

METHODOLGY

*Emission Factors are default values for carbon steel unless a specific electrode type is noted in the Process column. Consult AP-42 or other reference for different electrode types.
Welding emissions, lb/hr: (# of stations)(max. lbs of electrode used/hr/station)(emission factor, lb. pollutant/lb. of electrode used)
Cutting emissions, lb/hr: (# of stations)(max. metal thickness, in.)(max. cutting rate, in./min.)(60 min./hr.)(emission factor, lb. pollutant/1,000 in. cut, 1" thick)
Emissions, lbs/day = emissions, lbs/hr x 24 hrs/day
Emissions, tons/yr = emissions, lb/hr x 8,760 hrs/day x 1 ton/2,000 lbs.
Plasma cutting emission factors are from the American Welding Society study published in Sweden (March 1994).
Welding and other flame cutting emission factors are from an internal training session document.
See AP-42, Chapter 12.19 for additional emission factors for welding.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: Ravens, Inc.
Address City IN Zip: 1201 W. Culver Road, Knox, IN 46534
Registration: 149-12765
Plt ID: 149-00015
Reviewer: NH/EVP

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
3.3	28.9

Facilities	**MMBtu/hr**
Space heaters (2)	0.8
Space heaters (10)	2.5
Total	**3.3**

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.03	0.11	0.01	1.45	0.08	1.21

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

Appendix A: Emissions Calculations
Unpaved Roads

Company Name: Ravens, Inc.
Address City IN Zip: 1201 W. Culver Road, Knox, IN 46534
Registration: 149-12765
Plt ID: 149-00015
Reviewer: NH/EVP

Forklift

0.4 round trips/hr x 0.07 mile/one-way trip x 2 one way trips/round trip x 8760 hr/yr = 490.6 miles/year

Ef = k*5.9*(s/12)*(S/30)*(W/3)^0.7*(w/4)^0.5*((365-p)/365)
= 2.58 lb/mile
where k = 0.8 (particle size multiplier)
s = 4.8 % silt content of unpaved roads
p = 125 days of rain greater than or equal to 0.01 inches
S = 10 miles/hr vehicle speed
W = 14 tons average vehicle weight
w = 18 wheels

2.58 lb/mi x 490.56 mi/yr = 0.63 tons/yr
2000 lb/ton

Total Potential PM Emissions **0.63 tons/yr**

Note: W (tons average vehicle weight) = (23 tons (maximum gross vehicle weight) + 5.0 tons (tare weight)) / 2